**Department of Energy**
Idaho Field Office
785 DOE Place
Idaho Falls, ID 83401-1562

January 8, 1992

Dear Citizen,

The Department of Energy, the Environmental Protection Agency, and the State of Idaho are implementing the Federal Facility Agreement and Consent Order by moving forward with an aggressive program of waste cleanup at the INEL. As a demonstration of our commitment to keep you informed and involved with these cleanup activities, a fact sheet and two proposed plans discussing three cleanup projects are enclosed. These projects include the groundwater investigation and cleanup of an injection well at the Test Area North and the cleanup of unexploded ordnance at various locations at INEL.

Scoping for the Remedial Investigation and Feasibility Study of groundwater beneath the Test Area North is in the early stages of development. Public scoping is scheduled to identify the range of issues that should be addressed. Scoping is the process of asking questions such as "What information is needed and what alternatives should be considered for cleanup?" and "What potential environmental impacts caused by the cleanup action should be considered and analyzed?". DOE will consider citizen comments and ideas to help guide the study.

The Proposed Plan for an Interim Action to Reduce the Contamination Near the Injection Well and in the Surrounding Groundwater at the Test Area North, Idaho National Engineering Laboratory describes alternatives for an interim action that is being considered to reduce contamination near the injection well and in the surrounding groundwater. The groundwater is contaminated with radioactive and nonradioactive materials that were disposed in the injection well. This occurred from about 1955 to 1972 when organic, inorganic, and radioactive wastewaters were added to industrial and sanitary wastewaters that were injected into the groundwater. At that time, the use of injection wells was considered an accepted disposal practice.

The Proposed Plan for a Cleanup of Unexploded Ordnance Locations at the Idaho National Engineering Laboratory will clean up ordnance (military explosive devices) which have been discovered at the INEL by site personnel. Explosive devices found to date include 3- to 16-inch artillery shells, partially exploded 125- to 2,000-pound bombs, anti-tank mines, depth charges, and smokeless powder and dummy bombs with spotting charges. These ordnance are primarily the result of World War II era activities associated with the former Naval Proving Ground. This expedited interim action is being conducted because there is sufficient information to take action to eliminate the danger that unexploded ordnance pose to INEL personnel and the risks associated with high explosive residues.

The two proposed plans evaluate alternatives for remediation and describe the alternative preferred by the Department of Energy, Environmental Protection Agency, and State of Idaho for each action. These agencies are requesting public review and comment on the alternatives to assist in the selection of a final remedy. The remedy selected by the agencies may be the preferred alternative outlined in the proposed plans or a combination of other alternatives and suggestions offered by the public.

To encourage public discussion on these projects, three public meetings have been scheduled. Each meeting will begin at 6:30 p.m. The meeting locations and dates are as follows:

| | | |
|---|---|---|
| **Idaho Falls** | Tue., February 4, 1992 | Westbank Inn, 475 River Parkway |
| **Boise** | Wed., February 5, 1992 | Boise Public Library, 715 S. Capitol Blvd. |
| **Burley** | Thur., February 6, 1992 | Burley Inn, 800 N. Overland |

An informal discussion is scheduled from 5:30 to 6:30 p.m. at each location. During this time, federal and state representatives will be available to discuss various project issues and answer questions.

Additional information on the three projects will be placed in the Administrative Record at the INEL Information Repository section of the public libraries in Boise, Moscow, Pocatello, Twin Falls, and Idaho Falls and the INEL Technical Library in Idaho Falls.

The 30-day public comment period for the two proposed plans and scoping project begins January 13, 1992. If you would like to provide written comments, please send them by February 12, 1992 to the following addresses:

TAN and Ordnance Proposed Plans

Jerry Lyle, Acting Deputy Assistant Manager
Environmental Restoration and Waste Management
DOE Idaho Field Office
785 DOE Place, MS 3902
Idaho Falls, ID 83401-1562

TAN Groundwater Scoping

Walter N. Sato, Acting Director
Environmental Restoration Division
DOE Idaho Field Office
785 DOE Place, MS 3902
Idaho Falls, ID 83401-1562

It is important that interested citizens such as yourself participate in scoping the groundwater investigation at the Test Area North and the selection of a remedial alternative for the injection well at Test Area North and ordnance locations. Cleanup at INEL is important to all of us. I invite and encourage you to read the enclosed proposed plans and fact sheet, ask questions, and offer suggestions regarding cleanup activities.

Sincerely,

Walter N. Sato
Acting Director
Environmental Restoration Division

COMMUNITY RELATIONS PLAN

F A C T S H E E T

Idaho National Engineering Laboratory

*January 1992*

# DOE Studies Groundwater Contamination at the Test Area North

## Introduction

A major environmental study, a Remedial Investigation/Feasibility Study, has been initiated to evaluate the extent of contamination and remediation alternatives at the Test Area North at the Idaho National Engineering Laboratory (INEL; see Figure 1). The U.S. Department of Energy Idaho Field Office (DOE-ID) is conducting this study in cooperation with the U.S. Environmental Protection Agency (EPA) Region 10, and the Idaho Department of Health and Welfare, Division of Environmental Quality. Involvement by members of the public is needed to help identify issues and concerns and potential environmental impacts associated with remediation alternatives.

This fact sheet provides information and attempts to answer questions citizens may have about groundwater contamination, the environmental study process, and ways the public can become informed and involved.

## Environmental Restoration at the INEL

The DOE-ID, EPA, and the State of Idaho have entered into an agreement, the Federal Facility Agreement and Consent Order (also known as the Interagency Agreement), to investigate and remediate, as necessary, contamination at the INEL. Within this agreement, the INEL has been divided into 10 Waste Area Groups that are associated with major INEL facilities. These have been further broken down into operable units. There are 10 operable units in Waste Area Group 1 - Test Area North. The contaminated groundwater at the Test Area North is operable unit 1-07. Each operable unit is scheduled for investigation by the DOE-ID in cooperation with the EPA and the State of Idaho. Schedules for characterizing the operable units in Waste Area Group 1 are contained in the Action Plan for Implementation of the Federal Facility Agreement and Consent Order (*document 420.3, pages A-3, 5, 6, 7 in the information repositories).*

## The Cleanup Process

A study, called a **Remedial Investigation/Feasibility Study,** is under way to identify the best way to clean up wastes at the Test Area North. A Remedial Investigation/Feasibility Study is a two-part process. The first part, the **Remedial Investigation**, begins with scoping. DOE-ID believes the public should participate in the scoping activity. The Remedial Investigation is used to determine the types, quantities, and locations of contamination at a given site and to assess the potential effects that contamination may have on human health and the environment. Potential health effects are documented in a risk assessment, which is part of the Remedial

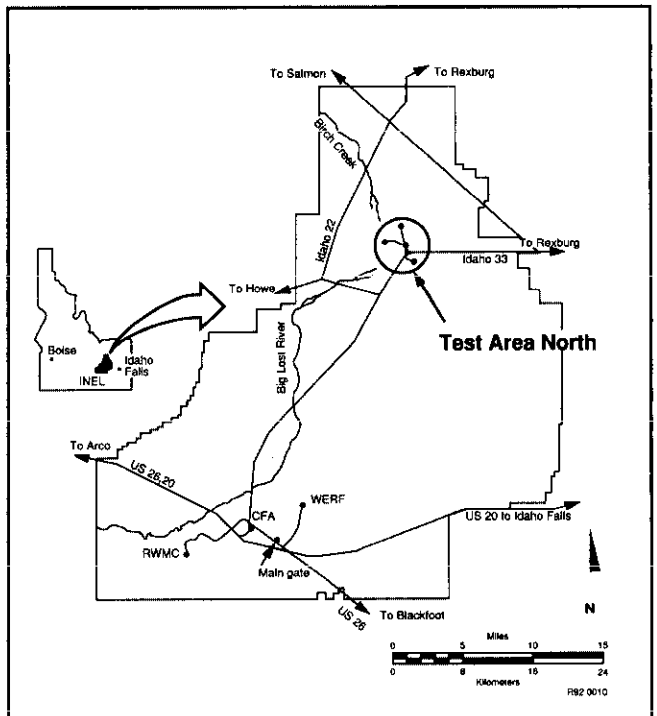


**Figure 1.** Test Area North at the Idaho National Engineering Laboratory.

Investigation. To be "at risk" means that:

1. A harmful substance is expected to be, or is actually, in contact with a person or object.
2. The substance is (or will be) present in a form that can cause harm (e.g., if ingestion is the concern, it is in a form that can be ingested).
3. The substance is in a concentration that is sufficient to cause harm.
4. Overall risk is expressed as an increased risk of cancer.

Information on contamination and risk collected during a Remedial Investigation is used to help identify and screen potential cleanup alternatives to reduce that risk. Full development and detailed analysis of cleanup alternatives are conducted during the **Feasibility Study**, which often overlaps with the Remedial Investigation. The objectives of the Feasibility Study are to identify the alternatives for remediation and to select and describe a remedial action that satisfies Applicable or Relevant and Appropriate Requirements for mitigating confirmed environmental contamination.

**Interim actions** are similar to Remedial Investigation/ Feasibility Studies but are smaller in scope and conducted when there is a potential threat to human health or the environment that can or should be addressed within a short timeframe. They also are conducted when a problem is well-defined and does not require the detailed study provided in a Remedial Investigation/Feasibility Study.

When the Remedial Investigation/ Feasibility Study or interim action is completed, a **Proposed Plan** is prepared to identify the preferred alternative for remediation. A public comment period is then held on the Proposed Plan. When the comment period ends and all comments have been given consideration, a **Record of Decision** is prepared by the three agencies, formally selecting the final remedial action. A **remedial action** is a series of steps taken to eliminate, control, or monitor the actual or potential release of contaminants from a site to the environment as directed by the Record of Decision.

In summary, this process includes the following steps:

- Scoping
- Remedial Investigation/Feasibility Study or Interim Action
- Proposed Plan
- Record of Decision
- Remedial Action

It is DOE policy, to determine if there are potentially significant environmental impacts related to the cleanup alternatives developed during the Remedial Investigation/Feasibility Study or interim action. These evaluations will be conducted at the same time as each Remedial Investigation/Feasibility Study or interim action and will generally be incorporated into the final decision documents.

DOE will begin the process to prepare environmental documentation for the Test Area North groundwater contamination by holding public scoping meetings. These meetings will be used to inform the public and assist DOE in identifying potential impacts that should be evaluated during the Remedial Investigation/ Feasibility Study. These public scoping meetings may be used to meet DOE requirements for environmental impact statement scoping meetings if it is determined that cleanup alternatives being considered may have significant environmental impact. A Notice of Intent to prepare an environmental impact statement would then be published and a public scoping period would be reopened to receive additional public comments. If it is determined that no significant impact would occur, a Finding of No Significant Impact will be published following completion of the Remedial Investigation/Feasibility Study.

## The Test Area North

The Test Area North, which is located in the northern portion of the INEL, was originally established in the 1950s to support the U.S. Air Force and Atomic Energy Commission, Aircraft Nuclear Propulsion Program, which has been terminated.

Today, the Test Area North includes the Technical Support Facility and three satellite areas: Containment Test Facility, Water Reactor Research Test Facility, and Initial Engine Test Facility. Many of these facilities provide direct support for various reactor testing and special nuclear waste management programs being conducted at the INEL.

## Groundwater Contamination

**What is the source of groundwater contamination at the Test Area North?**

An injection well at the Technical Support Facility is believed to be the principle source of groundwater contamination at the Test Area North. From 1958 to 1972, this 16-inch diameter, 310-foot-deep well was used to inject low-level radioactive, organic, and sewage wastewaters into the groundwater below the Test Area North. These wastewaters were generated during efforts to develop a nuclear powered aircraft

and with tests that simulated loss-of-coolant accidents in nuclear reactors.

**Concerns with groundwater contamination**

Releases to the groundwater at the Test Area North were identified as a problem during groundwater sampling in September 1987. This sampling effort found trichloroethylene and tetrachloroethylene in two water supply wells at levels exceeding drinking water standards. Subsequent well drilling and sampling in 1989 and 1990 confirmed that the two contaminants had spread farther into the aquifer.

Other contaminants in the groundwater that exceed drinking water standards include lead and strontium. Several other organic, inorganic, and radionuclide contaminants have also been found, but at much lower levels. *(A complete list of contaminants can be found in the Information Repositories in binder 1100, section 1105.2 in the libraries listed on page 4.)*

The highest groundwater contaminant levels are found near the injection well. These levels drop rapidly as the distance from the well increases.

**Who or what is at risk?**

The DOE believes the current risk of exposure to groundwater contaminants is minimal. At this time, the only contaminated wells are located within a few miles of the Test Area North (see Figure 2) and all the drinking water at the facility is treated before use, so no human health exposures exist. However, while no one is currently at risk from the contaminated groundwater, there is the possibility that in the future someone may use the groundwater and become exposed to the contaminants. Therefore, evaluating contaminant reduction is not only prudent, it is also required by federal and state laws.

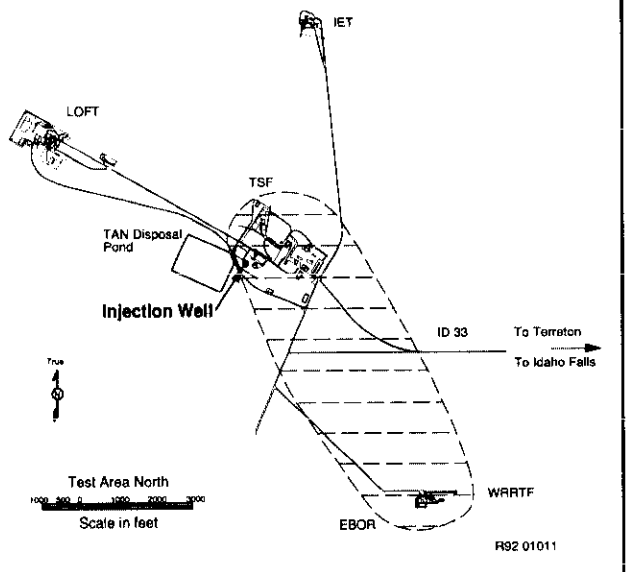


**Figure 2.** Estimated contaminated plume boundaries.

The horizontal boundaries of contamination are already fairly well understood. Consequently, the main objective of the study described in this fact sheet will be to determine the deeper boundaries of the contaminants and to determine appropriate cleanup actions. Since there is already enough information to begin reducing contamination near the injection well, the DOE-ID, EPA, and State of Idaho have also decided to initiate an interim action on high levels of contamination in and near the injection well. This interim action will continue until the Remedial Investigation/Feasibility Study is completed in 1995. The comment period for that project begins January 13 and continues through February 12, 1992.

**Preliminary cleanup alternatives for groundwater contamination**

Given the conditions at TAN, there are several types of methods that are being considered under the Remedial Investigation/Feasibility Study and the interim action. The list of actions given below is not permanent and will be modified based on public comment and technical evaluations of the information gathered under the Remedial Investigation/Feasibility Study and the interim action.

The possible actions include:

- No action: This alternative involves maintaining administrative controls without taking any direct action to treat or remove the contaminants.
- Pumping contaminated water into activated carbon and ion exchange columns: The organic, metal and radionuclide contamination in the water would be removed by the carbon and the ion exchange resins. Wastes would be disposed of at existing INEL facilities, if available, or other designated facilities.
- Pumping contaminated water into an air stripping unit and ion exchange columns: Organics would be removed by the air stripper and recaptured in carbon columns. Metals and radionuclides would be removed from the water by the ion exchange resins. Wastes would be disposed of at available facilities.
- Pumping contaminated water into a chemical oxidation system: Organics would be destroyed

by chemical treatment. Metals and radionuclides would be removed by ion exchange resins. Wastes would be disposed of at available facilities.

- Injecting air into the ground to remove organics: Air forced into the groundwater would remove the organics which would then be captured by activated carbon. Metals and radionuclides would be left in the water to naturally disperse. The organics would be destroyed in the carbon recovery process.

These options, combinations or modifications of these options, or even an entirely new option may finally be chosen once the Remedial Investigation/Feasibility Study evaluation is completed and all public comments have been considered. The actual cleanup option will not be selected until September 1994. Cleanup operations would not begin until 1995.

## Public Involvement

The public is encouraged to become informed about the groundwater contamination at the Test Area North and to get involved in the decision-making regarding cleanup. Under the scoping process, citizens are encouraged to identify concerns and suggestions on cleanup alternatives and any possible environmental impacts that might result from conducting cleanup actions. This input will be helpful in establishing the scope of issues to be studied during investigations of the Test Area North groundwater cleanup.

The following public involvement activities are currently planned:

### Comments on this fact sheet

Any comments or questions regarding contaminants, potential risks, cleanup technologies being considered, or other information in this fact sheet should be directed to Mr. Walter N. Sato at the address listed below.

### Public Meetings

DOE-ID will hold three meetings to gather public comments on the Remedial Investigation/Feasibility Study and the interim action. These suggestions will be incorporated into the investigation as appropriate. Comments made at the meetings will be helpful to the decision-makers. Written scoping comments should be sent to: **Walter N. Sato, Acting Director, Environmental Restoration Division, DOE Idaho Field Office, 785 DOE Place, MS 3902, Idaho Falls, ID 83401-1562.**

The meetings dates and locations are:

| | | |
|---|---|---|
| **Idaho Falls** | Westbank Inn | Feb. 4 |
| **Boise** | Boise Public Library | Feb. 5 |
| **Burley** | Burley Inn | Feb. 6 |

All meetings will begin at 6:30 p.m. DOE-ID and contractor staff will be available an hour before each meeting to informally discuss these projects.

## What Happens Next?

Following these public scoping meetings on the Test Area North groundwater, the Remedial Investigation/ Feasibility Study and assessment of environmental impacts will begin. Once these studies are completed, the DOE-ID, EPA, and the State of Idaho will identify a preferred cleanup alternative in a Proposed Plan. A 30-day public comment period will be opened to gather public comments on the Proposed Plan. Public meetings will be conducted to explain the Proposed Plan and to receive comments on the preferred and other alternatives.

In addition to these activities, the DOE-ID will hold public meetings and provide periodic updates through the INEL Reporter and other fact sheets to keep the public informed about the progress of the studies.

## Information Repositories

Additional information can be reviewed in any of the INEL information repository sections of the public libraries listed below.

- **INEL Technical Library**
  1776 Science Center Dr., Idaho Falls
- **Idaho Falls Public Library**
  457 Broadway, Idaho Falls
- **Pocatello Public Library**
  812 East Clark St., Pocatello
- **Boise Public Library**
  715 S. Capital Blvd., Boise
- **Twin Falls Public Library**
  434 2nd Street East, Twin Falls
- **Moscow-Latah County Library**
  110 S. Jefferson, Moscow

# Proposed Plan for a Cleanup of Unexploded Ordnance Locations at the Idaho National Engineering Laboratory

This proposed plan describes an interim action, or cleanup, that is proposed to reduce the potential hazard from conventional unexploded ordnance (i.e., military explosive devices) and soil contaminated with high explosive residues at identified locations at the Idaho National Engineering Laboratory (INEL). The interim action will comply with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, i.e., the Superfund law) and the Hazardous Waste Management Act (HWMA, i.e., Idaho's hazardous waste law). The Department of Energy (DOE), the Environmental Protection Agency (EPA), and the Idaho Department of Health and Welfare (IDHW),(the Agencies), are soliciting comments from the public on this proposed plan.

This plan, submitted in accordance with Section 117(a) of CERCLA, presents the possible alternatives considered and highlights the interim action alternative preferred by the Agencies. The actual remedy selected may be the preferred alternative, a combination of elements from some or all of the alternatives, or another identified response action. Comments are being solicited on all of the alternatives, not just the preferred alternative. The cleanup alternative for the ordnance areas will not be selected until the public comment period has ended and all comments have been received and considered.

## Purpose and Need for Interim Action

The purpose of an interim action is to clean up a site in order to eliminate, reduce, or control hazards posed by that site, or to expedite the completion of total site cleanup. This interim action will meet both objectives. The Agencies recognize that adequate information and technology are available to start cleanup activities at the identified ordnance sites. This proposed action, called an interim action, may not be the only cleanup that is needed at the ordnance sites, or serve as the final disposition of wastes present, but is a "common sense" approach where gross contamination or other hazards exist. Interim actions must be consistent with, and not interfere with, any potential or planned final action(s).

**Public Comment Period**
**January 13 to February 12, 1992**

The proposed interim action is intended to reduce or eliminate the risk from unexploded ordnance and high explosive residues at the identified ordnance areas. The identified areas have been evaluated using the Department of Defense (DOD) Risk Assessment Code, developed specifically for ordnance sites. Removal of ordnance and soil contaminated with high explosives would reduce the safety risk of exposure to unexploded ordnance and help limit the possible future exposure to soil and airborne contaminants associated with high explosive residues. Posting access roads to suspected ordnance areas will reduce potential exposure by warning the public of the possible presence of unexploded ordnance and the associated hazards.

This interim action is intended to have a positive impact on the area, improving the environment at the ordnance sites. No known threatened or endangered species, wetlands, cultural or historical resources would be affected by the interim action. There is no

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reason to believe that any social, economic, or archaeological values would be diminished by activities associated with this interim action. In the event of discovery of such remedial resources, activities would be halted until the appropriate determinations can be made and impacts mitigated as required to proceed with the interim action. None of the alternatives would release contamination to surface or groundwater. Fugitive dust emissions would be controlled to prevent airborne contamination and ensure worker safety.

**How you can participate** - The public is encouraged to participate in the remedy selection process. You can participate by reading this proposed plan, reading additional documents in the Administrative Record by visiting one of the information repositories listed on page 12, attending one of the public meetings listed on page 12, or by submitting written comments to the address shown on page 10. Written comments will be given the same consideration as verbal comments. All comments and transcripts of meetings will become part of the Administrative Record. Questions should be directed to the INEL Community Relations Office at the address listed on page 10.

## Background

The INEL is an 890 square mile federal facility operated by DOE, whose primary missions have been nuclear reactor technology development and waste management. In November 1989, the INEL was put on the National Priorities List (NPL) because releases of hazardous substances have occurred, which may pose an unacceptable risk to human health and the environment. Under CERCLA, the risks posed by those substances at sites on the NPL must be evaluated and appropriate cleanup methods selected and implemented to reduce those risks.

The INEL has been divided into ten Waste Area Groups (WAGs) to better manage the investigations needed to determine appropriate remedial actions. Each WAG is in turn divided into operable units for easier management of characterization and cleanup activities and to expedite total site cleanup. This strategy allows the Agencies to focus available cleanup resources on those areas that could potentially pose the greatest risk to human health and the environment. Areas known to contain unexploded ordnance have been designated as Operable Unit 10-05 in WAG 10 under this management scheme.

A schedule for the characterization and cleanup of each operable unit can be found in the INEL Federal Facility Agreement and Consent Order (FFA/CO) and FFA/CO Action Plan. These documents provide procedures and processes to ensure cleanup operations at the INEL comply with State and Federal environmental laws as required by CERCLA. They can be viewed at one of the six information repositories listed on page 12.

The WAG 10 site-wide comprehensive Remedial Investigation/Feasibility Study (RI/FS) is scheduled for completion in the year 2001 and is the final RI/FS scheduled for the INEL. In the interim, RI/FS investigations at the other WAGs will be completed according to the schedule in the FFA/CO Action Plan and lead to the final comprehensive RI/FS for WAG 10. By starting the interim action process now, cleanup activities on ordnance locations will begin much earlier than if following the RI/FS schedule in the Action Plan. The proposed interim action is consistent with overall plans for this operable unit.

## Site Description

Numerous unexploded ordnance devices have been discovered at the INEL by Site and subcontractor personnel. The ordnance are primarily the result of past activities associated with the former Naval Proving Ground (NPG) prior to inception of the INEL in 1949 (see Figure 1). These activities included aerial bombing practice, naval artillery testing, explosives storage bunker testing, and ordnance disposal. Unexploded ordnance have been found to be more concentrated in areas where these activities are known to have occurred. Ordnance found to date include: 3- to 16-inch artillery shells, partially exploded 125- to 2,000-pound bombs, anti-tank mines, depth charges, smokeless powder, and dummy bombs with spotting charges.

Six ordnance locations have been identified for cleanup as part of this interim action. These areas contain known types of unexploded ordnance and are near or in areas frequented by INEL personnel. These locations are described below. The number in each description is used again in the figure on page 3 to illustrate approximate locations of the areas.

(1) Central Facilities Area Gravel Pit. One 5-inch artillery shell is buried by a slumped gravel pit wall. This location is within 500 feet. of a site proposed for future development and 250 feet. off a road that would be upgraded for this project.

(2) Storage Bunkers North of Idaho Chemical Processing Plant (ICPP). At least two storage bunkers at this location were destroyed in U. S. Navy tests resulting in 5-inch artillery shells, anti-tank mines, etc., in this area. This site poses a hazard to personnel in the vicinity. The approximate area is 10 acres.

(3) National Oceanic and Atmospheric Administration (NOAA) Grid. Numerous 5-inch artillery shells and chunks of high explosive have been found at this location. The area is periodically used by NOAA personnel for atmospheric tests and is within 2 miles of Test Reactor Area (TRA) and ICPP, two important operating facilities. The approximate area of this location is 5 acres.

(4) Central Facilities Area Building 633. This area was used as a firing station for support of naval artillery tests. Many types of ordnance have been removed from this area. One 5-inch artillery shell is located in a 25 feet deep French drain that has been backfilled with soil and cement capped. The area is currently used by INEL personnel. Some of the nearby buildings are scheduled for demolition. This location is approximately 20 acres.

(5) Fire Station II Zone. Evidence of numerous anti-tank mines and other ordnance debris have been found in this area near the INEL Fire Station II. These ordnance apparently were scattered by tests performed at other locations at the NPG. This location is approximately 10 acres in size and is used periodically for training of INEL fire fighting personnel.

(6) Power Line Road. The power line road is located approximately 2 miles east of ICPP and Fire Station II and is frequently used by INEL workers. Numerous 5-inch shells have been found in this area. Approximately 10 miles of this access road lies within the former Naval artillery range. If unexploded ordnance are cleared from a corridor 50 feet wide on both sides of this access road, the area would be about 118 acres.

The approximate locations of three suspected ordnance areas outside the former NPG are also included in Figure 1. Possible activities associated with these three areas included gun testing and Army Air Corps bomber practice. Current information regarding these activities and associated ordnance is not adequate to

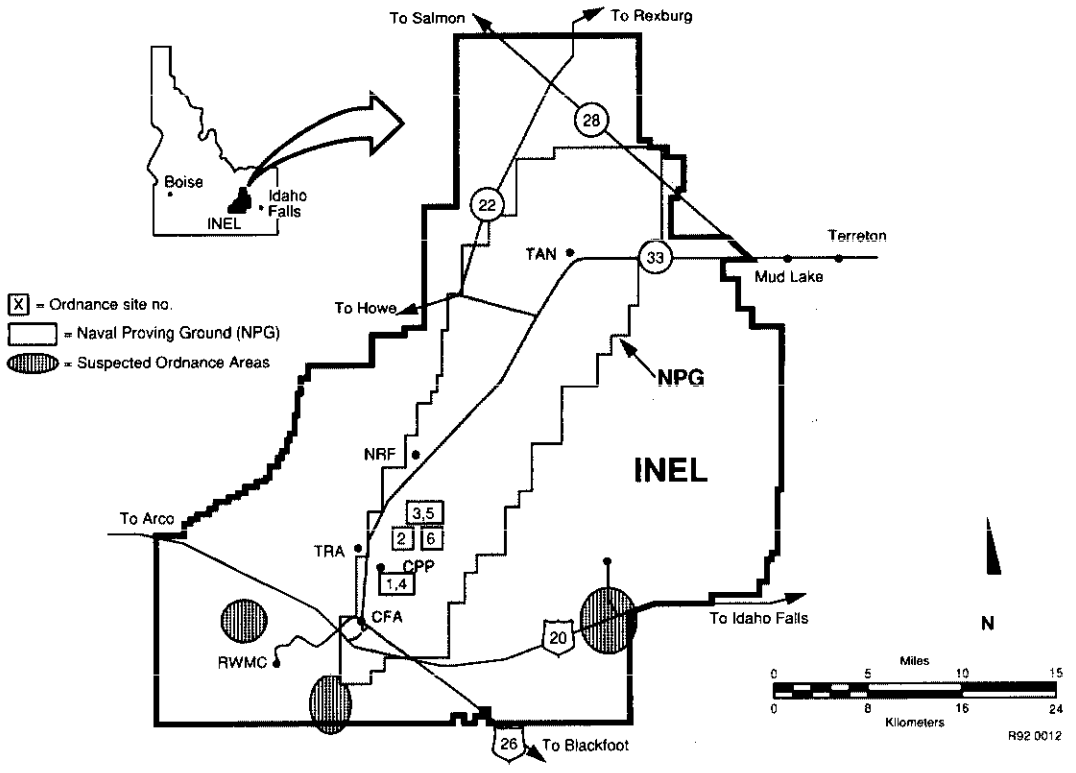


**Figure 1.** Location of INEL, former Naval Proving Ground (NPG) and ordnance sites selected for proposed cleanup.

support a cleanup decision at this time. Under three of the proposed action alternatives, signs would be posted at the borders of these suspected areas on public access roads which transect them.

## Summary of Site Risks

The main risk that has motivated this interim action is the potential explosive hazard associated with uncontrolled detonation of unexploded ordnance devices. Many of the known ordnance locations are near areas frequented by INEL personnel. Encounters with unexploded ordnance have already occurred and the potential remains for future encounters. This interim action will provide a mechanism to actively search for and identify unexploded ordnance in these areas and remove this unacceptable risk to site personnel.

The risks posed by the six identified ordnance sites have been evaluated using the DOD Risk Assessment Code. This methodology was developed to specifically address the risks associated with ordnance sites. The results of this evaluation have indicated that a removal of the potential threat is warranted.

## Contaminants of Concern

Additional risks result from the contamination of soils by high explosive residues from ordnance historically detonated or disposed in these areas. Disposal and detonation of ordnance at the NPG have released high explosive residues to the adjacent soils. These residues include picric acid, RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine), TNT (2,4,6-trinitrotoluene), and their numerous manufacturing contaminants and natural decomposition products. Contaminants, such as white phosphorus, metals, and other military explosives, may also be present. Many of these compounds are considered to be toxic. TNT and RDX are listed by the EPA as possible human carcinogens. The common TNT manufacturing contaminants, 2,4- and 2,6-dinitrotoluene (DNT), are listed as probable human carcinogens by the EPA. Dinitrobenzene and trinitrobenzene are common products resulting from the natural breakdown of TNT.

The pathways for human exposure to these compounds are through dermal absorption, ingestion, and inhalation of contaminated materials. A risk analysis for these pathways will be completed to develop cleanup action levels and cleanup standards for all contaminants of concern if either Alternative 3 (the preferred alternative), or Alternative 4 is chosen. The risk analysis will determine soil concentrations that would provide a human health risk of within the NCP range of $10^{-4}$ to $10^{-6}$ for carcinogenic contaminants and a Hazard Index less than 1 for non-carcinogenic contaminants. Concentrations of soil contaminants above the $10^{-4}$ action levels determined by the risk analysis will be considered to pose an unacceptable risk, therefore requiring cleanup. The cleanup standard used will be the $10^{-6}$ levels. These action and cleanup levels developed by the risk analysis will be documented in the Record of Decision.

## What are the Interim Action Alternatives?

The following alternatives were evaluated as possible interim actions at the ordnance sites:

**Alternative 1 - No Action**
(for comparison purposes only)

**Alternative 2 - Placement of Administrative Barriers**

**Alternative 3 - Detonation of Unexploded Ordnance and Disposal On-site, Off-site Incineration of Contaminated Soil**

**Alternative 4 - Detonation of Unexploded Ordnance and Disposal On-Site, On-site Composting of Contaminated Soil**

These alternatives were chosen because they offer the potential to eliminate the explosive hazard of the unexploded ordnance and allow for proper disposal of any remaining waste.

## Summary of Alternatives Analyzed in Detail

The four interim action alternatives are described below. The costs presented are estimates, based on the described assumptions. Actual costs would vary based on the final design, detailed cost itemization, and any changes in scope that may develop as a result of public comment or during implementation of the interim action.

### Alternative 1 - No Action

Under the no action alternative, which is presented only for comparative purposes, no remedial action would be implemented. No immediate reduction of the explosive risk or risks from high explosive contamination would be accomplished. No

significant costs would be associated with the no action alternative.

### Alternative 2 - Placement of Administrative Barriers

This alternative would involve the placement of administrative controls, such as signs and fences, at all identified areas where unexploded ordnance have been found. Signs would be placed on public roads which transect known and suspected ordnance areas. Administrative barriers would not meet cleanup requirements but would potentially eliminate the human exposure pathway. However, this alternative would provide no guarantee of reducing the risks to site personnel and would do nothing to protect the environment from the release of explosive residues. Estimated total cost would be $182,600.

### Alternative 3 - Detonation and Disposal On-site, Off-site Incineration of Contaminated Soil

This alternative involves a phased approach leading to controlled on-site detonation of unexploded ordnance by experienced personnel, followed by removal and off-site incineration of soils contaminated with high explosive residues.

Phase I would proceed with an in-depth record search of NPG and INEL historical records. This would include searching DOD record storage facilities located outside of the INEL and would encompass all identified and suspected ordnance areas at the INEL. The record search would provide the necessary background information to identify NPG activities, target areas, and potential hazards in order to prepare plans, procedures, and health and safety documentation to implement the alternative. As part of Phase I activities, suspected ordnance areas, which are transected by public roads (see Figure 1), will be posed at the borders to warn the public of the possible presence of unexploded ordnance and the associated hazards. The need for additional remediation at these suspected ordnance areas would be evaluated during the record search.

Additional ordnance areas identified through the record search which the FFA/CO Remedial Project Managers agree will pose an immediate unacceptable risk to site personnel or the public, and consist of limited additional magnitude and associated hazards, will be considered within the scope of this interim action. Ordnance areas evaluated during the records search, which are deemed to pose an immediate unacceptable risk and fall outside the current scope of this interim action could be addressed by amending the Record of Decision (ROD). Upon concurrence of the three FFA/CO Project Managers, a ROD amendment may be initiated and would involve another public comment period.

Phase II would proceed with a systematic search for surface and near-surface ordnance at the identified ordnance areas using visual and geophysical search methods. Unexploded ordnance and chunks of explosive discovered in this manner would be marked, identified, and investigated to determine ordnance types and whether high explosives were contained within. These ordnance would then be detonated in place or, if necessary, moved to a safer location for detonation with other like devices by qualified explosive ordnance disposal technicians. The areas would then be policed for shrapnel and examined to ensure complete detonation of explosive materials. Any pieces of high explosive residue released due to incomplete detonation would be redetonated. Nonhazardous solid waste resulting from detonation would be disposed in the INEL landfill.

Phase III would involve systematic sampling of soils in areas where detonations occurred and areas suspected to be contaminated from past activities due to visible discoloration. Samples would be analyzed using field methods developed for high explosives by the DOD with 10% of the samples sent to an off-site analytical laboratory for quality assurance and confirmation of results. This data would be used to determine the volume of soil to be removed.

Phase IV would involve removal of soil contaminated with high explosives above the action levels. Contaminated soils would first be sampled and analyzed using Toxicity Characteristic Leachate Procedure (TCLP) methodology to determine if RCRA requirements apply and then taken to an off-site treatment/disposal facility for incineration and disposal. The estimated cost assumes 185 $yd.^3$ of soil will be remediated. The soil volume estimate is based on detonation and removal of 150 ordnance and soil cleanup of existing locations within the six identified areas. Estimated total cost for this alternative would be $2,359,500.

### Alternative 4 - Detonation and Disposal On-site, On-site Composting of Contaminated Soil

Alternative 4 involves the same phased approach as in Alternative 3. The NPG record search, ordnance area

search, detonation, and soil sampling (Phases I, II and III) would be the same for this alternative. However, remediation of soil contaminated with high explosive residues (Phase IV) would utilize an innovative technology currently being evaluated by the DOD and EPA at a Department of Army Superfund site.

In this alternative, contaminated soil would be removed and mixed with nutrient-rich organic material (manure, etc.) and placed inside a containment structure where temperature and moisture could be controlled. This methodology utilizes native soil microorganisms, similar to municipal waste composting, to degrade contaminants and has been shown to successfully remediate mixed explosives in soil within 90 days. Treated soil would be sampled and analyzed for explosives to confirm successful remediation. Soil would then be used for clean fill at the INEL.

The capabilities of INEL soil and associated native microorganisms to degrade explosive wastes would first be evaluated in a pilot-scale test. If this methodology is proven to be not feasible, Alternative 3 would be selected as a contingency. Total cost estimated for this alternative is $2,075,500.

## Comparative Analysis of Alternatives

The Agencies evaluated the first seven of the nine criteria established by the National Contingency Plan (see box on page 7). The eighth criterion, State Acceptance, is addressed on page 9. The ninth criterion, Public Acceptance, cannot be evaluated at this time. It will be addressed in the Interim Action Record of Decision based on public comments to this Proposed Plan. The table on page 8 has been developed to aid in the comparison of the proposed alternatives.

The first two criteria discussed below are the threshold criteria. Alternatives which do not meet the threshold criteria are not considered further. The remaining criteria are called balancing criteria. They are used to further evaluate the alternatives. The no action alternative does not meet the threshold or balancing criteria.

*Overall Protection of Human Health and the Environment*

The primary risks to be reduced are the safety hazard to INEL personnel due to the unexploded ordnance and risk of ingestion or inhalation of high explosive residues present on-site. Alternative 1 would do nothing to reduce these risks. Alternative 2 could potentially reduce these risks but the effectiveness of administrative controls cannot be guaranteed. Alternatives 3 and 4 would remove the hazard associated with the unexploded ordnance and soil contaminated with high explosive residues above the action levels, providing protection for human health and the environment.

Another potential risk is that presented to the public by the suspected ordnance areas. Alternatives 2, 3, and 4 all address this risk by erection of signs on public roads which transect these areas.

*Compliance with ARARs*

Applicable or relevant and appropriate requirements (ARARs) are the Federal and State laws that are legally applicable or relevant and appropriate under the circumstances to the remedial action or cleanup.

There are three types of ARARs: (1) chemical-specific, (2) action-specific, and (3) location-specific. Chemical-specific: There are no chemical-specific ARARs governing clean-up levels for unexploded ordnance or high explosive residues in soil. Federal and State water quality regulations are not applicable because the interim action does not deal with surface water or groundwater contamination. Water quality issues will be addressed in the WAG 10 site-wide, comprehensive RI/FS.

Unexploded ordnance are not classified as hazardous waste as described in RCRA. Explosives residues are classified as listed RCRA hazardous wastes if they are generated by a manufacturing or processing facility or may be characteristic RCRA hazardous wastes if they are reactive. The concentrations of explosives in the contaminated soils will be sampled, but are not expected to be reactive. Any contaminated soils taken off-site for treatment/disposal would need to be sampled and analyzed using RCRA Toxicity Characteristic Leachate Procedure methodology.

Action-specific: An air quality permit is not required for this interim action since it is a CERCLA action. However, the substantive requirements of an air permit must be met as required by the FFA/CO. Location-specific: There are no location-specific ARARs that affect this interim action.

*Long-term Effectiveness and Permanence*

Alternative 1 provides no risk reduction. Alternative 2 provides some reduction of risk but effectiveness is potentially limited. Alternatives 3 and 4 would provide long-term effectiveness by removing the potential explosive hazard and any soil which is contaminated with high explosive residues above the action levels.

*Reduction of Toxicity, Mobility, or Volume through Treatment*

Alternatives 1 and 2 would provide no treatment and, therefore, would fulfill none of the goals of this criterion.

Alternative 3 would remove unexploded ordnance and treat contaminated soils by incineration, thereby reducing the volume of waste.

Alternative 4 would remove unexploded ordnance and treat contaminated soils by composting. This treatment would potentially remove contaminants and, after sampling to confirm successful remediation, soils would be used as clean backfill. This alternative would greatly reduce toxicity, mobility and volume of contaminants.

*Short-term Effectiveness*

Alternative 2 could be implemented quickly using existing Site resources. No significant impacts to the environment would be associated with this alternative. However, this alternative would only reduce risks associated with the ordnance sites, not eliminate them.

## Evaluation Criteria

The NCP requires evaluation of the alternatives against the following nine criteria:

**Overall Protection of Human Health and the Environment.** Whether a remedy provides adequate protection and how risks posed through each exposure pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

**Compliance with Federal and State Environmental Standards.** Whether a remedy will meet all the applicable or relevant and appropriate requirements (ARARs) of Federal and State environmental ststutes, or provide grounds for invoking a waiver.

**Long-term Effectiveness and Permanence.** The magnitude of any remaining risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met.

**Reduction of Toxicity, Mobility, or Volume through Treatment.** The anticipated performance of the treatment technologies that may be employed.

**Short-term Effectiveness.** The speed with which the remedy protects human health and the environment, as well as the remedy's potential to create adverse impacts during the construction and implementation period.

**Implementability.** The technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the selected solution.

**Cost.** Includes capital, operations, and maintenance.

**State Acceptance.** Indicates whether, based on its review of the Proposed Plan and supporting documents, the State concurs with, opposes, or has no comment on the preferred alternative.

**Community Acceptance.** Will be assessed in the Interim Remedial Action Record of Decision following a review of public comments received on the Proposed Plan and supporting documents.

Alternative 3 could be implemented relatively quickly using available technology. Additionally, this technology has been demonstrated in the past at the INEL and DOD facilities. Detonation of unexploded ordnance would remove the immediate safety hazard to Site workers. Removal of contaminated soil would further reduce risks and cause minimal impacts to the environment. Dust and noise would be produced by this alternative but these impacts would be mitigated to minimize impacts to INEL workers and the environment. Disturbed areas would be backfilled with clean fill as necessary and reseeded to match natural vegetation.

Alternative 4 would require some lead time to design and perform a pilot scale study before implementation. After showing successful treatment can be accomplished, this alternative would be implemented. Alternative 4 would effectively remove the hazard of unexploded ordnance and risks associated with explosive residues in soil. Impacts to workers and the environment would be similar to those identified in Alternative 3.

*Implementability*

Alternative 1 requires no action to be implemented. Alternative 2 could be readily implemented following procurement of materials, minimal personnel training, and planning.

Detonation and Incineration has previously been implemented at many DOD facilities. These facilities brought an incinerator on-site for contaminated soil. Due to low volume of contaminated materials expected, this action cannot justify the initial costs of bringing an incinerator to the INEL, therefore, off-site incineration is proposed. Alternative 3 could be readily implemented using existing technologies.

Alternative 4 would require design and completion of a pilot scale study prior to construction and implementation of Phase IV. Soils and contaminants specific to the INEL would be evaluated to insure success of the composting technology.

*Cost*

Estimated costs are shown in the box on page 12. No significant cost would be associated with Alternative 1. Alternative 2 costs are minimal but would also require minimal annual inspection and maintenance to ensure administrative barriers remain in place.

Alternative 3 and 4 have higher costs but remove the immediate hazard and associated risks. These two alternatives assume that 150 unexploded ordnance will be removed and detonated in Phase II. This assumption is based on site personnel observations and ordnance found to date on the INEL. Alternatives 3 and 4 also assume known acreage for each area and

**Comparative Analysis of Alternatives**

| Interim Action Alternatives Evaluation Criteria | Alternative 2: Administrative Barriers | Alternative 3: Detonation & Incineration | Alternative 4: Detonation & Composting |
|---|---|---|---|
| Long-term Effectiveness | ○ | ● | ● |
| Reduction of Toxicity, Mobility, or Volume Through Treatment | ○ | ● | ● |
| Short-term Effectiveness | ◒ | ● | ● |
| Implementability | ● | ● | ○ |
| Cost | ● | ◒ | ◒ |

● = Best ◒ = Good ○ = Poor

the volume of contaminated soil (185 $yd.^3$) to be remediated. Deviation from the above assumptions would significantly affect estimated costs of the alternatives.

*State Acceptance*

The Idaho Department of Health and Welfare (IDHW) has been involved in the preparation of this proposed plan and comments received have been incorporated. This proposed plan is being issued with IDHW concurrence.

*Community Acceptance*

Community acceptance will be evaluated after receipt of written and oral public comments. The Agencies will review and consider the comments on this Proposed Plan and will incorporate comments in the decision process. The Responsiveness Summary portion of the Interim Remedial Action's Record of Decision will provide responses to the public comments.

## Summary of the Preferred Alternative

In summary, the DOE, EPA, and IDHW have selected **Alternative 3 - Detonation and Disposal On-Site, Off-Site Incineration of Contaminated Soil** as the preferred alternative for the proposed interim action on the INEL ordnance sites. This alternative, in comparison to the other alternatives, provides the best balance of tradeoffs with respect to the goals of the evaluation criteria, as required by CERCLA and the NCP. Community acceptance will be evaluated based on comments received and will be documented in the Record of Decision (ROD).

### Cost Comparison of Interim Action Alternatives

| | | |
|---|---|---|
| **Alternative 2 - Administrative Barriers** | | |
| Design & Planning | 120 hrs. @ $80/hr. | $ 9,600 |
| Materials | fences & signs | 60,000 |
| Fabrication | 150 hrs. @ $60/hr. | 9,000 |
| Installation | 700 hrs. @ $60/hr. | 42,000 |
| Documentation | 75 hrs. @ $80/hr. | 6,000 |
| Labor/Supervision | 700 hrs. @ $80/hr. | 56,000 |
| **TOTAL** | | **$182,600** |
| **Alternative 3 - Detonation & Incineration** | | |
| Record Search | 2500 hrs. @ $80/hr. | $ 200,000 |
| Safety Analysis | 1500 hrs. @ $80/hr. | 120,000 |
| Design & Planning | 750 hrs. @ $80/hr. | 60,000 |
| Ordnance Detonation | 150 ordnance @ $2000 ea. | 300,000 |
| Materials/Supplies | markers, charges, etc. | 30,000 |
| Ordnance Searches | 163 ac. @ $3500/ac. | 570,500 |
| Soil Sampling | 450 samples @ $1000 ea. | 450,000 |
| Soil Remediation | 185 $yd.^3$ @ $3400/$yd.^3$ | 629,000 |
| **TOTAL** | | **$2,359,500** |
| **Alternative 4 - Detonation & Composting** | | |
| Record Search | 2500 hrs. @ $80/hr. | $ 200,000 |
| Safety Analysis | 1500 hrs. @ $80/hr. | 120,000 |
| Remedial Design | 1500 hrs. @ $80/hr. | 120,000 |
| Ordnance Detonation | 150 ordnance @ $2000 ea. | 300,000 |
| Materials/Supplies | markers, charges, etc. | 30,000 |
| Ordnance Searches | 163 ac. @ $3500/ac. | 570,500 |
| Soil Sampling | 450 samples @ $1000 ea. | 450,000 |
| Compost Site Construction/Operation | | 250,000 |
| Confirmational Sampling | 50 samples @ $500 ea. | 25,000 |
| Site Reclamation | | 10,000 |
| **TOTAL** | | **$2,075,500** |

The preferred alternative would include:

***Phase I*** - Extensive search of NPG and INEL historical records. Preparation of plans and procedures, and posting of signs on public access roads.

***Phase II*** - Systematic search for unexploded ordnance followed by detonation and disposal of non-hazardous solid waste.

***Phase III*** - Systematic sampling of soils for detection of explosive residues using field analytical methods and lab samples for confirmation.

***Phase IV*** - Removal of contaminated soils and transport off-site to EPA-approved incinerator for treatment and disposal.

## Public Involvement Opportunities

Public input is critical to the CERCLA process. The Agencies encourage you to participate in the remedy selection process.

The following public involvement activities or opportunities have been, or will be, available:

**Informational Meetings** - Public meetings have been held throughout Idaho to discuss other environmental issues at the INEL. Public comments received at those meetings were considered in the preparation of this proposed plan.

**Public Meetings** - During the 30-day comment period, public meetings are scheduled as listed on the back page. Verbal and written comments on this proposed plan will be accepted at those meetings. These comments will be addressed in the Responsiveness Summary portion of the Record of Decision.

**Written Comments** - Submittal of written comments is encouraged and should be addressed to Mr. Jerry Lyle at the address shown at right.

**Questions** - If you have questions concerning the proposed plan or other INEL issues, please call the INEL Community Relations Office at the phone number listed on this page.

## Information Repositories

The Administrative Record and other information sources are available for the public to review at the repositories listed on page 12. The Administrative Record includes documents used by the Agencies during the remedial action decision process.

The Agencies are soliciting your comments on this proposed plan and the preferred alternative presented. All comments, verbal or written, will be addressed in the Responsiveness Summary portion of the Record of Decision scheduled for May 1992.

## Addresses

For submission of written comments:

Mr. Jerry Lyle, Acting Deputy Assistant Manager
Environmental Restoration and Waste Management
DOE Idaho Field Office
785 DOE Place, MS 3902
Idaho Falls, ID 83401-1562

For additional information:

Mr. Reuel Smith
INEL Community Relations Office
785 DOE Place, MS 3902
Idaho Falls, ID 83401-1562
(208) 526-6864

Mr. Wayne Pierre
Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, WA 98101

Mr. Dean Nygard
Idaho Department of Health and Welfare
Division of Environmental Quality
1410 N. Hilton
Boise, ID 83706

This Proposed Plan was prepared by:

EG&G Idaho, Inc.
Environmental Restoration Program
Waste Area Group 10
P. O. Box 1625

## Acronyms and Glossary

***Action Plan*** - Document that defines the schedule and procedures for implementing the INEL Federal Facility Agreement and Consent Order (FFA/CO), the agreement between DOE, EPA, and the State of Idaho implementing CERCLA at the INEL.

***Administrative Record*** - Documents including correspondence, public comments, Record of Decision, technical reports, and others upon which the Agencies base their remedial action selection.

***ARARs*** - (Applicable or Relevant and Appropriate Requirements) - The Federal and State laws that are legally applicable or relevant and appropriate under the circumstances.

***CERCLA*** - (Comprehensive Environmental Response, Compensation, and Liability Act, commonly called Superfund, implemented by 40 CFR 300) - Act that establishes a program to identify sites where hazardous substances have been, or might be, released into the environment and to ensure that they are cleaned up.

***HWMA*** - (Hazardous Waste Management Act) - Idaho's law that governs hazardous waste.

***Interim actions*** - Actions to remediate sites in phases using operable units as early actions to eliminate, reduce, or control the hazards posed by a site or to expedite the completion of total site cleanup.

***NCP*** - (National Contingency Plan, 40 CFR 300) - The basic policy directive for federal response actions under CERCLA, including the procedures and standards for responding to releases of hazardous substances.

***NPL*** - (National Priorities List) - A list of sites designated under CERCLA as needing long-term remedial cleanup, whose purpose is to inform the public of the most serious hazardous waste sites in the nation.

***Operable unit*** - Separate response measures, consistent with a permanent remedy utilized to facilitate faster action at sites.

***Ordnance*** - Military supplies, i.e., weapons, ammunition.

***Proposed Plan*** - Document requesting public input on a proposed remedial alternative.

***RCRA*** - (Resource Conservation and Recovery Act, implemented by 40 CFR 260) - Federal Act that defines hazardous waste and the requirements for management of hazardous waste.

***Responsiveness Summary*** - The part of the Record of Decision (ROD) that summarizes significant comments received from the public and which provides the Agencies an opportunity to comment "on the record".

***RI/FS*** - (Remedial Investigation/ Feasibility Study) - A document that describes the characterization of the nature and extent of contamination at a site and the evaluation of cleanup options.

***ROD*** - (Record of Decision) - Document that is a consolidated source of information about the site, the remedy selection process, and the selected remedy for a cleanup under CERCLA. The ROD also contains the Responsiveness Summary.

***SARA*** - (Superfund Amendments and Reauthorization Act) -Act signed into law in 1986 that increased the level of public and state involvement in the CERCLA process and brought the INEL and other federal facilities under Superfund rules.

## Public Comment Solicited on Cleanup

DOE, EPA, and IDHW are currently seeking public comment on a proposed plan to cleanup unexploded ordnance and associated contaminated soil from identified sites at the INEL. This proposed plan describes the alternatives considered and the alternative preferred by the Agencies.

### The Public Comment Period is January 13 - February 12, 1992.

Written comments can be sent to Jerry Lyle , Acting Deputy Assistant Manager, Environmental Restoration and Waste Management, DOE Idaho Field Office, at the address on page 10. Verbal comments will be recorded at each of the public meetings listed below.

## Information Repositories

**Additional Information** is contained in the Administrative Record for the Interim Action. Those documents can be reviewed at any of the information repositories listed below.

**INEL Technical Library**
1776 Science Center Dr., Idaho Falls

**Idaho Falls Public Library**
457 Broadway, Idaho Falls

**Pocatello Public Library**
812 East Clark St., Pocatello

**Boise Public Library**
715 S. Capital Blvd., Boise

**Twin Falls Public Library**
434 2nd Street East, Twin Falls

**Moscow-Latah County Library**
110 S. Jefferson, Moscow

# PUBLIC MEETINGS ON PROPOSED PLAN

### Informal Discussion Period: 5:30 - 6:30 P.M.

### Meetings begin at 6:30 P.M. at the following locations:

**Idaho Falls** - Tuesday, February 4, 1992 at the Westbank Inn.

**Boise** - Wednesday, February 5, 1992 at the Boise Public Library.

**Burley** - Thursday, February 6, 1992 at the Burley Inn.


*January 1992*

# Proposed Plan for an Interim Action to Reduce the Contamination Near the Injection Well and in the Surrounding Groundwater at the Test Area North, Idaho National Engineering Laboratory

## OVERVIEW

This Proposed Plan describes alternatives for an interim action that is being considered to reduce the contamination near the injection well and in the surrounding groundwater at the Test Area North (TAN) at the Idaho National Engineering Laboratory (INEL; see Figure 1). The injection well is located at the Technical Support Facility in the central part of TAN which consists of facilities for storing, examining, and managing spent nuclear fuels.

This plan highlights the preferred interim remedial action proposed by the U.S. Department of Energy (DOE), with the agreement of the U.S. Environmental Protection Agency (EPA) and the Idaho Department of Health and Welfare (IDHW). The plan was developed and is issued in accordance with Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This plan also meets DOE requirements for evaluating the environmental impacts of all the alternatives.

The actual interim remedy selected for the contaminant reduction may be the preferred alternative, a modification of the alternative, a combination of elements from some or all of the alternatives, or another alternative identified as a better option based on public comment or other new information. Therefore, the public is encouraged to review and comment on all of the alternatives, not just the preferred alternative.

The preferred alternative presented in this plan represents the initial recommendation based on evaluations of site conditions and alternative remedial actions. DOE and EPA, in consultation with the IDHW, will select the actual interim remedial alternative. However, this action will not be selected until the public comment period has ended and all comments have been reviewed and considered.

**How you can participate** - The public is encouraged to participate in the interim remedy selection process. You can participate in several ways. These include reading this Proposed Plan, reading additional documents at one of the information repositories listed on page 11, attending one of the three public meetings listed on page 13 and commenting on the Proposed Plan. Written and verbal comments will be given equal consideration and can be made at the public meetings or to Jerry Lyle at the address on page 11. All comments and transcripts of meetings will become part of the Administrative Record (see glossary). Information used to support the selection of the preferred alternative has been included in the Administrative Record, which is available to the public.

DOE, EPA, and IDHW will present their response to all comments submitted during the review period in a document called a Responsiveness Summary. Then, after considering these comments, DOE, EPA, and

**Public Comment Period**
**January 13 to February 12, 1992**

## Contents

IDHW will choose the actual remedial action and document this choice in a Record of Decision. The Record of Decision and the Responsiveness Summary will be available in the Administrative Record at the information repositories listed on page 11. Questions on this process should be directed to the INEL Community Relations Office at the address listed on page 11.

## Background

The INEL is an 890 square mile federal facility operated by DOE. The primary missions of the INEL are nuclear reactor technology development and waste management. In November 1989, the INEL was placed on the National Priorities List of hazardous waste sites because releases of hazardous substances that may pose a risk to human health and the environment have occurred.

***Overall Site Background:*** To better manage the activities that may be needed to protect human health and the environment, the INEL has been divided into 10 Waste Area Groups. Each of these groups is in turn divided into operable units to allow investigation and remedial activities to occur more quickly. This strategy allows the DOE, EPA and IDHW to focus available remedial resources on those areas which could potentially pose the greatest risk to public health and the environment.

A framework for the investigation and remediation of each operable unit is in the Federal Facility Agreement and Consent Order (FFA/CO) and Action Plan documents for the INEL (also known as the Interagency Agreement). These documents, negotiated between the DOE, EPA and IDHW, describe procedures so that remedial actions at the INEL will be conducted according to specified schedules and in compliance with State and Federal environmental laws.

***TAN Groundwater Interim Action and Remedial Investigation:*** The TAN groundwater contamination (designated as Operable Unit 1-07 under the FFA/CO) will be addressed under both an interim action and a Remedial Investigation/Feasibility Study (RI/FS). The interim action, as described in more detail in this plan, would begin to reduce contaminants near the injection well and in the surrounding groundwater. The interim

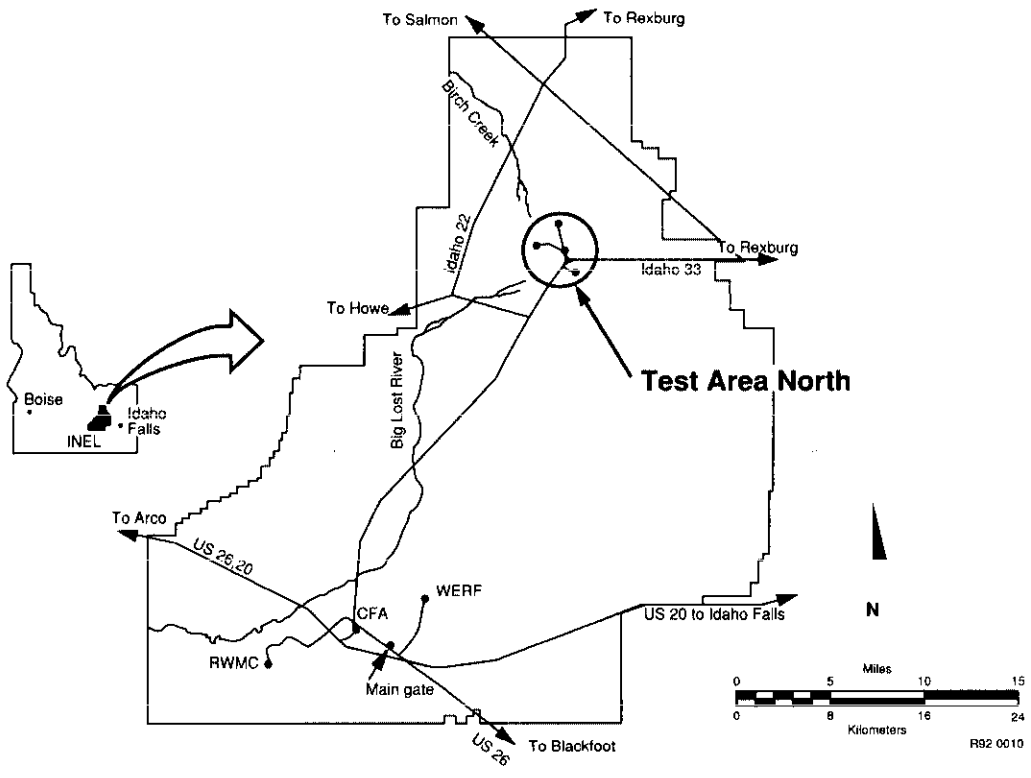


**Figure 1.** Test Area North (TAN) at the Idaho National Engineering Laboratory.

action would also provide actual field experience on groundwater remediation that could be used in the RI/FS to allow a more detailed evaluation of any final remedial action alternatives. Alternatives chosen for the final remedial action on the TAN groundwater would be identified in a separate RI/FS Proposed Plan that would be issued for public review before the final remedial action is selected in 1995.

## Site Description

The principal source of groundwater contamination at TAN has been the Technical Support Facility injection well. As shown in Figure 2, the injection well is located in the southwestern corner of the Technical Support Facility at TAN. The well was drilled in 1953 to a depth of 310 feet and has a 12-inch diameter casing with openings from 180 to 244 feet and from 269 to 305 feet below the land surface.

The injection well was used until 1972 to dispose of TAN liquid wastes into the fractured basalt of the Snake River Plain Aquifer. After 1972, the wastes were discharged to the TAN disposal pond. These liquid wastes included organic, inorganic, and low-level radioactive wastewaters that were added to industrial and sanitary wastewaters. Activities that generated these wastes included efforts to develop a nuclear powered aircraft and tests that simulated accidents involving the loss of coolant from nuclear reactors.

Releases to the TAN groundwater were first identified in September 1987 when low levels of trichloroethylene and tetrachloroethylene were found in the two nearby wells that supply drinking water to TAN. Subsequent sampling in 1989 and 1990 at the drinking water and other TAN area wells confirmed the presence of trichloroethylene and tetrachloroethylene in the aquifer, and also identified lead and strontium as contaminants that exceeded drinking water standards. Concentrations of these four contaminants are shown in Table 1.

The original uses of the trichloroethylene and tetrachloroethylene (halogenated organics) cannot be clearly identified due to a lack of disposal and usage records. Therefore, these halogenated organics would likely not be considered listed solvents (F001 through F005) as described in 40 CFR Part 261 under the

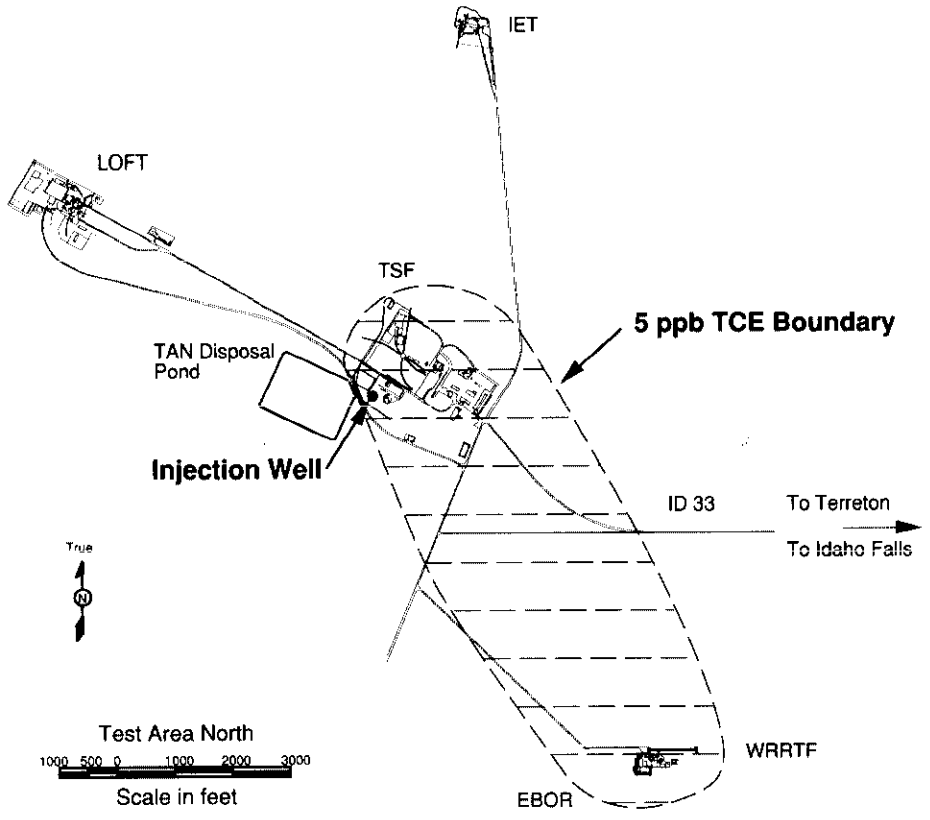


**Figure 2.** Estimated Contaminated plume boundaries.

Resource Conservation and Recovery Act (RCRA).

Some information about the present extent of contamination is known. The highest groundwater contamination levels are found near the injection well. These levels drop rapidly as the distance from the well increases. In the 30 years since the well started operation, the trichloroethylene may have travelled as far as 1-1/2 miles in the direction of groundwater flow (south to south-east; see Figure 2). The other contaminants of concern have not been found at significant levels more than 1/4 mile from the well. Based on existing knowledge, the trichloroethylene plume is not expected to reach existing supply or drinking water wells in areas outside of TAN for over 100 years.

The Snake River Plain Aquifer lies approximately 200 feet below land surface at the well. Contaminants have been found from this water surface to 400 feet below the ground surface.

Concentrations in the injection well itself have not been measured since 1990. However, trichloroethylene concentrations up to 28,000 micrograms per liter (µg/l) and tetrachloroethylene concentrations up to 37 micrograms per liter (µg/l) were measured in water that was removed from the well in early 1989.

In early 1990, an initial remedial effort removed sludge in the bottom 60 feet of the injection well. This sludge was determined to be a mixed waste (see glossary) and is being stored at the INEL until a facility is available to dispose of the waste.

## Summary of Site Risks

The only wells that are currently contaminated are in the immediate TAN area, and the untreated groundwater is not accessible to TAN workers or the general public. Since 1989, the water from these contaminated wells has been treated to below drinking water standards, therefore the people using the water at TAN are not at risk.

Although there is very little direct human risk from the contaminated groundwater at TAN, trichloroethylene, tetrachloroethylene, lead, and strontium have been found at levels that exceed their drinking water standards. The trichloroethylene and tetrachloroethylene represent a greater potential threat due to their higher concentrations and they are the focus of this interim action.

## Need and Purpose for the Interim Action

The purpose of this interim action is to reduce contamination in the groundwater near the injection well so that further degradation of the Snake River Plain Aquifer is prevented and the cost and complexity of a final remedy is reduced. This action is necessary because the groundwater beneath TAN contains contaminants at levels that may represent an unacceptable risk to future users.

Because the aquifer is made up of a complex system of sedimentary interbeds (see glossary) in between layered and fractured basalt, the injection well may not be the best or only location where contamination could be reduced. For this reason, if appropriate, efforts would also be made to reduce contamination at other nearby wells and at wells installed as part of the Operable Unit 1-07 groundwater RI/FS or this interim action. Within practical limits, operation of the interim remedial action would be adjusted to remove as much of the contamination as possible. Adjustments in the operation of the system would be made by the DOE in cooperation with the EPA and IDHW.

**Table 1: Concentration of Groundwater Contaminants of Concern**

| Contaminants | Concentration[a] | Drinking Water Standard |
|---|---|---|
| Trichloroethylene | 2 to 1,300 µg/l | 5 µg/l |
| Tetrachloroethylene | 2 to 71 µg/l | 5 µg/l |
| Lead | 3 to 515 µg/l | 50 µg/l |
| Strontium | 0.002 to 0.23 picocuries/ml | 0.008 picocuries/ml |

[a] Numbers obtained from sampling wells in the TAN area during late-1989 and 1990.

The interim remedial action would be conducted so the existing environmental problems at this site are not made worse. It would also be conducted so it would not interfere with the final remedy. In fact, it is expected that the interim remedial action would help the development of the final remedy that would consider all the potential threats at this site (Operable Unit 1-07).

## What are the Interim Action Alternatives?

The following alternatives for reducing the contamination in the vicinity of the injection well were evaluated.

Alternative 1 - No Action

Alternative 2 - Groundwater Extraction and Treatment by Air Stripping, Ion Exchange, and Carbon Adsorption

Alternative 3 - Groundwater Extraction and Treatment by Carbon Adsorption and Ion Exchange

Alternative 4 - Groundwater Extraction and Treatment by Chemical Destruction and Ion Exchange

## Summary of Alternatives

The four alternatives are described in the following paragraphs.

**Alternative 1** - No Action

The "no action" alternative is presented as a baseline for comparison against the other alternatives. Under this alternative, DOE would not take any further action to reduce the volume of contamination in the vicinity of the injection well. Additional contaminants would continue to spread from this residual material causing further degradation of the aquifer and possibly making a final remedy considerably more difficult and expensive. However, existing groundwater monitoring, drinking water treatment, and TAN institutional controls would continue.

There would be no immediate costs associated with this alternative.

**Alternative 2** - Groundwater Extraction and Treatment by Air Stripping, Ion Exchange, and Carbon Adsorption

With this alternative, groundwater would be pumped from the injection well and possibly one or more other wells within the contaminated groundwater plume. An average pumping rate of about 50 gallons per minute (gpm) is expected with occasionally higher pumping rates of about 100 gpm.

The pumped water would be treated using a filter to remove sediment, an air stripper (see glossary for terms) to remove organic contaminants, and then an ion exchange column to remove radionuclides and inorganics. Gases from the air stripper would be treated with activated carbon to capture the organics. Treated air and water would be monitored and released to the environment once discharge standards were met. The treated water would be discharged into the existing 35-acre disposal pond at TAN and allowed to naturally percolate and evaporate.

Spent carbon would be tested to determine if it is a RCRA hazardous waste. If the carbon is RCRA hazardous, it would be transported off-site in compliance with RCRA subtitle C requirements for generators of hazardous waste. Spent carbon would be recycled through an acceptable off-site regeneration (incineration) facility. The waste ion exchange resins and the filter sediment would be disposed of at the existing low-level waste disposal facility at the Radioactive Waste Management Complex at INEL.

Estimated costs for Alternative 2 are $7,715,000 (see Table 4).

**Alternative 3** - Groundwater Extraction and Treatment by Carbon Adsorption and Ion Exchange

This alternative is the same as Alternative 2 except the proposed treatment system is different.

With this alternative, the contaminated groundwater would be treated using a filter to remove sediment, an activated carbon system to remove organics, and then an ion exchange column to remove radionuclides and inorganics. Wastes generated under this alternative would include sediment, activated carbon, and ion exchange resins. The activated carbon would contain both radionuclides and hazardous contaminants and thus may be a mixed waste.

Estimated costs for Alternative 3 are $7,440,000 (see Cost Breakdown Table).

**Alternative 4** - Groundwater Extraction and Treatment by Chemical Destruction and Ion Exchange

This alternative is the same as Alternatives 2 and 3 except the proposed treatment system is different.

The contaminated groundwater would be treated using a filter to remove sediment, a chemical treatment system such as ozone and ultraviolet light to destroy the organics, and then an ion exchange column to remove inorganics and radionuclides. Wastes generated under this alternative would include ion exchange resins and sediments.

Estimated costs for Alternative 4 are $7,360,000 (see Cost Breakdown Table).

***Common Features for the Alternatives***

The remedial alternatives evaluated in this plan have the following common features.

***Costs***: Except for the no action alternative, all of the alternatives assume a two-year period for the interim remedial action so that costs could be estimated. Any additional remediation after two years would be done under the post-RI/FS remedial action.

***Waste Handling***: Alternatives 2, 3, and 4 would generate waste materials from investigation and treatment operations. The wastes may include drilling muds and cuttings; development water from well installation; purge water, soil and other material from sample collection; and contaminated protective clothing. Treatment residues would include sediments, prefilter materials, waste carbon, and waste ion exchange resins. All of these materials could be contaminated by organics, inorganics, and radionuclides.

The hazardous and/or radioactive characteristics of these wastes would be determined by sampling and/or prior knowledge of what caused the waste to be generated. This information would be used to decide where the wastes would go for treatment or disposal.

Solid and concentrated liquid wastes would go to existing INEL or off-site facilities for treatment, storage or disposal. These facilities could include but are not limited to the Radioactive Waste Management Complex for low-level radioactive wastes, the Waste Experimental Reduction Facility for mixed wastes, the Central Facilities Area landfill for common trash, and off-site facilities for hazardous wastes (see glossary for terms). However, if these existing treatment or disposal facilities are inadequate, either:

(1) the wastes would be stored in an approved storage area within the area of contamination (the one-mile Waste Area Group One boundary around the TAN facilities) at TAN until additional disposal facilities are available, or

(2) the interim action would be stopped until additional permitted waste storage capacity is available.

Wastewaters generated before the proposed interim action facility is built would be treated at an existing RCRA-permitted water treatment unit at TAN. This existing treatment unit, which will be primarily used during the TAN groundwater RI/FS, has a treatment system similar to the one described in Alternative 3 - a filter to remove sediments, activated carbon to remove organics, and ion exchange resins to remove radionuclides and inorganics.

The treated groundwater would be discharged to the 35-acre TAN disposal pond near the injection well and allowed to percolate and evaporate naturally. Only a portion of the pond would be used because the eastern end has also been contaminated by activities at TAN. The pond would be divided using an earth berm so that treated water could be discharged only to central and western areas of the pond. These areas are unaffected by existing contamination. In this way, contaminants already in the pond would not be pushed deeper into the soil by water coming from the interim action. Existing contamination in the disposal pond is scheduled to be characterized and remediated, if necessary, as another part of the Federal Facility Agreement and Consent Order between the DOE, EPA and IDHW (i.e., under Operable Unit 1-06).

Drill cuttings from the new wells should be non-hazardous and non-radioactive based on cuttings analyzed from 1989 and 1990 well drilling at TAN. These cuttings would be surveyed with field instruments for hazardous and radiological contamination. If the results show no actionable contamination, the cuttings would be disposed of next to the TAN disposal pond.

***Other Impacts***: Except for the no action alternative, each of the options would also require supporting

facilities or activities that would have a minimal impact on the environment. These impacts would include dust and waste generation during construction (from 1992 to 1993) of a temporary building or modification of an existing building to house the planned treatment facilities, and the drilling of additional wells. Engineering designs and controls would be used to mitigate noise and aesthetic problems.

## Comparative Evaluation of Alternatives

The preferred alternative is ***Alternative 2 - Groundwater Extraction and Treatment by Air Stripping, Ion Exchange, and Carbon Adsorption***. The DOE, EPA, and IDHW are recommending this alternative over the other alternatives after evaluating the first eight of the nine CERCLA criteria given in Table 2. A summary of this evaluation is given in Table 3.

The ninth criterion, which cannot be evaluated in the Plan, is public acceptance. DOE, EPA, and IDHW will use public comments and new information to accept or modify the preferred alternative or possibly to select another alternative presented in this plan or taken from the public review. This decision will be explained in the Interim Action Record of Decision.

The analysis that the DOE, EPA, and IDHW used to evaluate the four alternatives given in this plan is summarized in Table 3 and described in the following sections.

*Overall Protection of Human Health and the Environment*

Alternative 1 is not protective of human health and the environment because further degradation of the environment would continue if no action is taken.

Alternatives 2, 3, and 4 are protective of human health and the environment, and would improve the environment in the TAN area. Each would reduce contamination levels, help prevent further degradation of the groundwater, and would be protective of future groundwater use. These alternatives satisfy this criterion.

*Compliance with ARARs*

Alternative 1 does not meet applicable or relevant and appropriate requirements (ARARs) of Federal or State environmental laws. Because this alternative does not satisfy either of the first two threshold criteria, it will not be discussed further in this plan.

### Table 2: Evaluation Criteria

The NCP requires evaluation of the alternatives against the following nine criteria:

**Overall Protection of Human Health and the Environment.** Whether a remedy provides adequate protection and how risks posed through each exposure pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

**Compliance with Federal and State Environmental Standards.** Whether a remedy will meet all the applicable or relevant and appropriate requirements (ARARs) of Federal and State environmental statutes, or provide grounds for invoking a waiver.

**Long-term Effectiveness and Permanence.** The magnitude of any remaining risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met.

**Reduction of Toxicity, Mobility, or Volume through Treatment.** The anticipated performance of the treatment technologies that may be employed.

**Short-term Effectiveness.** The speed with which the remedy protects human health and the environment, as well as the remedy's potential to create adverse impacts during the construction and implementation period.

**Implementability.** The technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the selected solution.

**Cost.** Includes capital, operations, and maintenance.

**State Acceptance.** Indicates whether, based on its review of the Proposed Plan and supporting documents, the State concurs with, opposes, or has no comment on the preferred alternative.

**Community Acceptance.** Will be assessed in the Interim Remedial Action Record of Decision following a review of public comments received on the Proposed Plan and supporting documents.

Alternatives 2, 3, and 4 would meet their respective Federal and State ARARs and would satisfy the requirements of this criterion. The treatment facility built under these alternatives would be expected to remove a minimum of 90% of the contaminants in the groundwater before the treated water is discharged to the TAN disposal pond. Air emissions from the facility would be treated to meet State and Federal standards for hazardous air pollutants.

Since these alternatives are interim actions that would support the final remedy, none of the alternatives would meet drinking water standards for the groundwater under TAN. The overall reduction of groundwater contamination at TAN to below drinking water levels would be evaluated as part of the final remedial action under the Operable Unit 1-07 RI/FS. Under all three alternatives, the waste treatment residuals (treated below Best Demonstrated Available Technology requirements) would be delisted (i.e., shown to be non-hazardous waste) and thus no longer subject to RCRA Subtitle C hazardous waste disposal and closure requirements. The waste residuals could then be managed in accordance with the RCRA subtitle D (solid waste) requirements and/or the State solid waste disposal and closure requirements.

Alternatives 2, 3, and 4 would also address useful or recommended procedures for minimizing impacts on archaeological, cultural, environmentally sensitive, and historical resources in the TAN area. In addition, no significant irretrievable resources would be committed and no adverse socioeconomic effects would occur under these alternatives.

*Long-term Effectiveness and Permanence*

Alternative 2 would have the best long-term effectiveness and permanence because it would use incineration to destroy organic contaminants, thus reducing long-term waste management needs. Although Alternative 3 is an effective and accepted approach to reducing risk, it is less reliable in the long-term because of the inherent hazard of managing mixed wastes. Alternative 4 does destroy organics, so it has good long-term waste disposal effectiveness, but its complex design would require special engineering and construction techniques that may reduce its long-term operating effectiveness.

Since this is a temporary action, permanence in terms of the final response action on the groundwater would be determined by the Operable Unit 1-07 RI/FS.

*Reduction of Toxicity, Mobility, or Volume through Treatment*

Alternatives 2 and 4, through destruction of the organic contaminants by regeneration (incineration) or chemical destruction, provide the best reduction of toxicity and volume. Alternative 3, by fixing both organics and radionuclides onto the carbon, would need to be handled as a mixed waste. The only acceptable disposal option for this mixed waste carbon

**Table 3: Comparative Evaluation of Alternatives**

| Interim Action Alternatives<br><br>Evaluation Criteria | Alternative #2: Extraction and Treatment by Air Stripping, Ion Exchange, and Carbon Adsorption | Alternative #3: Extraction and Treatment by Carbon Adsorption and Ion Exchange | Alternative #4: Extraction and Treatment by Chemical Destruction and Ion Exchange |
|---|---|---|---|
| Long-term Effectiveness | ● | ○ | ◒ |
| Reduction of Toxicity, Mobility, or Volume Through Treatment | ● | ○ | ● |
| Short-term Effectiveness | ● | ◒ | ○ |
| Implementability | ◒ | ● | ○ |
| Cost | ○ | ◒ | ● |

● = Best ◒ = Good ○ = Poor

## Table 4: Cost Breakdown for the Alternatives

| Activity | Costs, $ | | |
|---|---|---|---|
| | **Alternative 2** Treatment by Air Stripping, Ion Exchange, Carbon Adsorption | **Alternative 3** Treatment by Carbon Adsorption and Ion Exchange | **Alternative 4** Treatment by Chemical Destruction and Ion Exchange |
| **Facility Design**[1] | 600,000 | 600,000 | 650,000 |
| **Well Drilling**[2] | | | |
| Well Conversion | 207,000 | 207,000 | 207,000 |
| Monitoring Wells | 226,000 | 226,000 | 226,000 |
| Waste Disposal | 42,000 | 42,000 | 42,000 |
| Subtotal | 475,000 | 475,000 | 475,000 |
| **Plant Costs** | | | |
| Building, piping | 575,000 | 575,000 | 575,000 |
| Process Equipment | 975,000 | 655,000 | 520,000 |
| Start-up Pump Test | 166,000 | 166,000 | 166,000 |
| Field Supervision | 132,000 | 132,000 | 132,000 |
| Subtotal | 1,848,000 | 1,528,000 | 1,393,000 |
| **Two year Operating Costs**[3] | | | |
| Operating Labor | 1,188,000 | 1,188,000 | 1,400,000 |
| Technical Support | 196,000 | 196,000 | 196,000 |
| Supplies/Material | 520,000 | 460,000 | 480,000 |
| Analytical Costs | 520,000 | 520,000 | 520,000 |
| Waste Disposal | 320,000 | 480,000 | 280,000 |
| Project Supervision | 470,000 | 470,000 | 470,000 |
| Subtotal | 3,194,000 | 3,294,000 | 3,326,000 |
| **Plant Decontamination** | 176,000 | 176,000 | 176,000 |
| **Contingency**[4] | 1,422,000 | 1,367,000 | 1,340,000 |
| **Total** | 7,715,000 | 7,440,000 | 7,360,000 |

[1] Design includes costs ($25,000 for Alternatives 2 and 3, and $50,000 for Alternative 4) for the small-scale design studies needed to improve actual performance of the treatment plant.

[2] Well drilling would include conversion of five existing wells to monitoring or water level wells, drilling of two new monitoring wells near the injection well, and waste treatment and disposal of the investigation-derived wastes. These wells will be in addition to the wells drilled under the RI/FS.

[3] The two year operational limit was selected because by that time the RI/FS remedial action treatment process will be designed, constructed, and ready for operation.

[4] Contingency (25%) covers uncertainties in construction and operating costs only.

would be complete destruction in a special incinerator that could also capture the radionuclides.

*Short-term Effectiveness*

Alternative 2 is anticipated to have the greatest short-term effectiveness. Alternative 2 presents the least amount of risk to workers, the community, and the environment because it relies on a proven remedial technology which would minimize the likelihood of equipment failure and because it would probably not generate mixed waste.

Although Alternatives 2 and 3 are similar with respect to remedial technology, Alternative 3 would generate more mixed waste which would require more complex handling procedures that could increase the risk to workers in the event of an accident.

Alternative 4 has the disadvantage of requiring more extensive bench- or pilot-scale studies than the other alternatives before the larger scale treatment system could be designed. In addition, this alternative would require more complex technology which would increase the risk to the workers and of a contaminant release to the environment if a failure occurred.

None of the alternatives could begin operation until 1993 to allow sufficient time for design and construction of the operating and treatment facilities. Alternatives 2 and 3 would require less time to achieve short-term protection because they would use readily available design and treatment technologies that are specifically demonstrated for treating contaminated groundwater. Alternative 4 would require more time to ensure that the chemical treatment equipment was properly designed and to obtain the necessary equipment.

*Implementability*

Alternatives 2 and 3 would be the simplest to implement. Both would require readily available engineering services and construction materials. However, Alternative 2 has more operational requirements than Alternative 3 because of the air stripper. As with the other alternatives, because of the fractured basalt aquifer, additional groundwater wells may be installed or utilized and the components of the treatment alternatives may have to be modified to implement the interim remedial action or to evaluate the effectiveness of the extraction system in the aquifer.

The Alternative 2 spent carbon would be regenerated off-site at an acceptable disposal facility.

Alternative 4 is the most complex alternative to design and construct. However, despite anticipated frequent downtime due to technical complexity, this alternative would require minimal handling of waste residue.

*Cost*

Estimated costs are shown in Table 4. Equipment costs caused the biggest differences between the alternatives. As a result, Alternative 4 is the least expensive choice, followed by Alternative 3 and then Alternative 2. Detailed assumptions for the costs shown in Table 4 are contained in the Administrative Record. These costs could change based on final design and more detailed cost itemization.

*State Acceptance*

IDHW has been involved in the preparation of this Proposed Plan and comments received have been incorporated.

*Community Acceptance*

Community acceptance of the preferred alternative and the other alternatives will be evaluated after receipt of comments on the proposed plan. DOE, EPA, and IDHW will review and consider public comments on this plan and will incorporate comments in the process that will lead to the Record of Decision. Responses to public comments will be provided in the Responsiveness Summary.

## Summary of the Preferred Alternative

In summary, DOE, EPA, and IDHW selected *Alternative 2 - Groundwater Extraction and Treatment by Air Stripping, Ion Exchange, and Carbon Adsorption* as the preferred alternative for the proposed interim action on the injection well and the groundwater contamination. This alternative is preferred because it best meets the key requirements of the first eight criteria required by CERCLA for remedial actions (see Table 3) and because all three types of contaminants would be actively removed from the groundwater. Alternative 2 would also not produce significant amounts of mixed wastes in comparison to the other alternatives.

The preferred alternative would include:

- Pumping the injection well and possibly other wells in the area at about 50 gpm (maximum 100 gpm) to reduce the contaminant levels and migration in the groundwater
- Treatment of the groundwater by filters, air stripping with carbon adsorption, and ion exchange to remove organic, inorganic, and radionuclide contaminants
- Sediments, waste ion exchange resins, and spent carbon would be disposed of at the INEL or other off-site facilities as available
- Discharge of treated water to an existing disposal pond for evaporation and percolation
- Monitoring of interim action performance using other wells in the TAN area to provide design and cost information for the final remedy.

## Public Involvement Opportunities

Public input is critical to the CERCLA process, and the DOE, EPA, and IDHW encourage you to participate in the remedy selection process. The following public involvement activities or opportunities have been, or will be, available:

**Public Meetings** - During the 30-day comment period, three public meetings are scheduled as listed on page 13. Verbal comments on the Proposed Plan will be accepted at those meetings.

**Written Comments** - Written comments are encouraged and should be addressed to the DOE-Idaho Environmental Restoration and Waste Management office listed on this page. Written and verbal comments will be given equal consideration. All comments, verbal or written, will be addressed in the Responsiveness Summary portion of the Record of Decision scheduled for the winter of 1991-1992 and will become part of the Administrative Record.

**Questions** - If you have questions concerning the Proposed Plan or other INEL issues, please call the INEL Community Relations Office at the phone number listed below.

## Addresses

For submission of written comments:

Mr. Jerry Lyle, Acting Deputy Assistant Manager
Environmental Restoration and Waste Management
DOE Idaho Field Office
785 DOE Place, MS 3902
Idaho Falls, ID 83401-1562

For additional information:

Mr. Reuel Smith
INEL Community Relations Office
785 DOE Place, MS 3902
Idaho Falls, ID 83401-1562
(208) 526-6864

Mr. Wayne Pierre
Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, WA 98101

Mr. Dean Nygard
Idaho Department of Health and Welfare
Division of Environmental Quality
1410 N. Hilton
Boise, ID 83706

## Information Repositories

**Additional Information** is contained in the Administrative Record for the Interim Action. Those documents can be reviewed at any of the information repositories listed below.

**INEL Technical Library**
1776 Science Center Dr., Idaho Falls

**Idaho Falls Public Library**
457 Broadway, Idaho Falls

**Pocatello Public Library**
812 East Clark St., Pocatello

**Boise Public Library**
715 S. Capital Blvd., Boise

**Twin Falls Public Library**
434 2nd Street East, Twin Falls

**Moscow-Latah County Library**
110 S. Jefferson, Moscow

## Acronyms and Glossary

***Action Plan*** - Federal Facility Agreement and Consent Order (FFA/CO) document which defines the schedule and procedures for implementing the Interagency Agreement, the agreement between DOE, EPA, and the State of Idaho implementing CERCLA at the INEL.

***Activated Carbon*** - Remedial technology where organic, inorganic, and radionuclide contaminants are removed from air or water by pieces of carbon slightly bigger than sand particles.

***Administrative Record*** - Documents including correspondence, public comments, Record of Decision, technical reports, and others upon which DOE, EPA, and IDHW base their remedial action selection.

***Air Stripping*** - Remedial technology where air is forced through the water to remove organic contaminants. The dirty air is then cleaned before being released to the environment.

***ARARs*** - (Applicable or Relevant and Appropriate Requirements) - The Federal and State laws that are legally applicable or relevant and appropriate under the circumstances.

***Area of contamination*** - The aerial extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the remedy. For TAN, this area is defined as the area enclosed by the Waste Area Group One boundary which extends one mile from the TAN facilities.

***Central Landfill*** - Solid waste disposal facility located near the Central Facilities Area on the INEL. This facility accepts non-hazardous and non-radioactive trash, debris, and other wastes for disposal.

***CERCLA*** - (Comprehensive Environmental Response, Compensation, and Liability Act, commonly called Superfund, implemented by 40 CFR 300) - Act which establishes a program to identify sites where hazardous substances have been, or might be, released into the environment and to ensure that they are remediated.

***Chemical Treatment*** - Remedial technology where chemicals and high intensity light are used to destroy organics in contaminated groundwater.

***Contaminants of Concern*** - Hazardous and radioactive substances that have the most risk to human health and the environment at this site.

***HWMA*** - (Hazardous Waste Management Act) - Idaho's law which governs hazardous waste.

***Interim action*** - Actions to remediate sites in phases using operable units as early actions to eliminate, reduce, or control the hazards posed by a site or to expedite the completion of total site remediation.

***Ion exchange*** - Remedial technology where small resin beads take metals and radionuclide particles out of contaminated water. The contaminants are taken out of the water and "exchanged" with non-hazardous materials such as sodium.

***Mixed waste*** - Wastes containing quantities of hazardous and radioactivity substances which exceed the regulatory definitions of what is hazardous and what is radioactive.

***mrem*** - One-thousandths of a Roentgen-equivalent-man, a unit of radiation which relates to biological damage in the human body due to radiation.

***NCP*** - (National Contingency Plan, 40 CFR 300) - The basic policy directive for federal response actions under CERCLA, including the procedures and standards for responding to releases of hazardous substances.

***National Priorities List*** - A list of sites designated as needing long-term remedial action, whose purpose is to inform the public of the most serious hazardous waste sites in the nation.

***Operable Unit*** - Areas or a group of sites defined by geographic features, contaminant boundaries, or other features distinguishing the area/sites as a distinct problem.

***picocurie*** - One-trillionth of a curie. Commonly used as a measure of radioactive strength.

***Proposed Plan*** - Document requesting public input on a proposed remedial alternative.

***Radioactive Waste Management Complex*** - is a facility in the southwestern part of the INEL (see Figure 1 in the main body of the text). This facility

accepts low-level radioactive waste for storage and disposal.

***RCRA*** - (Resource, Conservation and Recovery Act, implemented by 40 CFR 260) - Act which defines hazardous waste and the requirements for dealing with hazardous waste.

***Record of Decision*** - Document which is a consolidated source of information about the site, the remedy selection process, and the selected remedy for a remedial action under CERCLA. Contains the Responsiveness Summary (see below).

***Responsiveness Summary*** - The part of the Record of Decision (see above) which summarizes comments received from the public and provides DOE, EPA, and IDHW an opportunity to comment "on the record".

***RI/FS*** - (Remedial Investigation/ Feasibility Study) - A document which describes the characterization of the nature and extent of contamination and the evaluation of potential remedial options.

***Risk Assessment Scenarios*** - A range of conditions used to determine how much risk people would potentially experience from being exposed to those conditions. For example, the external exposure risk assessment scenarios for the human health risk evaluation for this Proposed Plan ranged from 365 days a year, 40% of the time, for 40 years, to 1 hour per day, 5 days per week, for one year.

***Sedimentary interbeds*** - are continuous or discontinuous layers of material deposited by water or wind. These layers were subsequently covered by basalt or additional sedimentary material. At the INEL, the sedimentary interbeds are generally less permeable to water than the layers of fractured basalt.

***SARA*** - (Superfund Amendments and Reauthorization Act) - Act signed into law in 1986 and which increases the level of public and state involvement in the CERCLA process.

***Waste Experimental Reduction Facility*** - is an incinerator that could burn radioactive and mixed waste to destroy hazardous and burnable material and captures the radioactive material for disposal at the Radioactive Waste Management Complex. Waste Experimental Reduction Facility is located in the southeastern part of the INEL (see Figure 1 in the main body of the text).

## Public Comment Needed on Contaminant Reduction in the TAN Groundwater

DOE, EPA, and IDHW are currently seeking public comment on a Proposed Plan to reduce the contamination near the injection well and in the groundwater at the Test Area North at the Idaho National Engineering Laboratory. This Proposed Plan describes the alternatives considered and the alternatives preferred by DOE, EPA, and IDHW. The public comment period is January 13 to February 12, 1992. Written comments can be sent to Jerry Lyle, Acting Deputy Assistant Manager of the Environmental Restoration and Waste Management office at the Department of Energy Idaho Field Office, at the address on page 11. Verbal comments will be recorded at each of the public meetings listed below.

## *Public Meetings on Proposed Plan*

**Idaho Falls - February 4, 1992 at the Westbank Inn.**

**Boise - February 5, 1992 at the Boise Public Library.**

**Burley - February 6, 1992 at the Burley Inn.**

*INEL Environmental Restoration Program*
*785 DOE Place, MS 3902*
*Idaho Falls, ID 83401-1562*

*Address Correction Requested*